



205352

## Hartford, Illinois

- ❖ Population – about 650
- ❖ Madison County
- ❖ Industrial
- ❖ Borders the Mississippi River to the West

## Refining

- ❖ Refining around Hartford since the early 1900s
- ❖ Standard Oil – Amoco – BPAmoco – BP Products of North America. Ceases refining around 1980. Additives Plant Closed in early 1990s
- ❖ Shell Oil – Equilon, Tosco, ConocoPhillips – Operating 350,000 bl/day refinery
- ❖ Buckeye Refining – Started operations in 1990s – refiner transmix

## Premcor Refinery

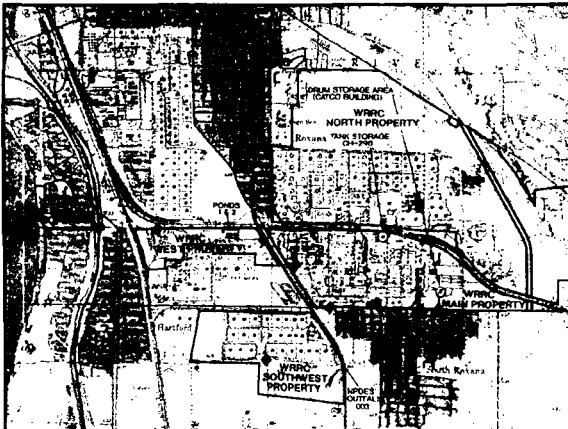
- ❖ Open in 1941 as Wood River Oil Company
- ❖ 1950 purchased by Sinclair
- ❖ 1967 Purchased by Clark Oil and Refining Company
- ❖ 1981 purchased by Apex Oil Company
- ❖ 1988 Apex went bankrupt and refinery was purchased by AOC Holding Company operated as Clark Refining and Marketing

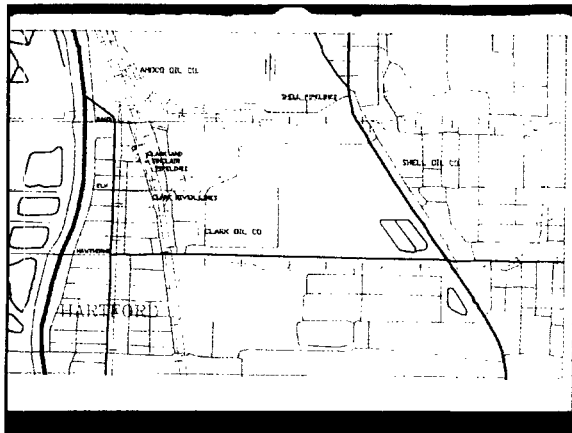
## Premcor Refinery

- ❖ In 2000 Clark changed its name to Premcor
- ❖ About 70,000 bpd
- ❖ September 2002 Premcor ceased operations at the Hartford Refinery
- ❖ MOU between Premcor and ConocoPhillips to purchase assets from Premcor – Coker, Crude Unit

## Pipelines

- ❖ Crude Oil and Refined Product
- ❖ BP, ConocoPhillips, Shell Products
- ❖ Buckeye Partners, Cherokee Pipeline
- ❖ Explorer Pipeline, Koch Industries
- ❖ Marathon Ashland, Ozark Pipelines,
- ❖ Platte Pipelines and St. Louis Pipeline Co.






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### Hartford Vapors

- ❖ Vapors problems have mainly been reported in the north part of Hartford
- ❖ First report of vapors was received by the Hartford Police Department in May 1966
- ❖ Vapor complaints followed in 1968, 69 and 70.

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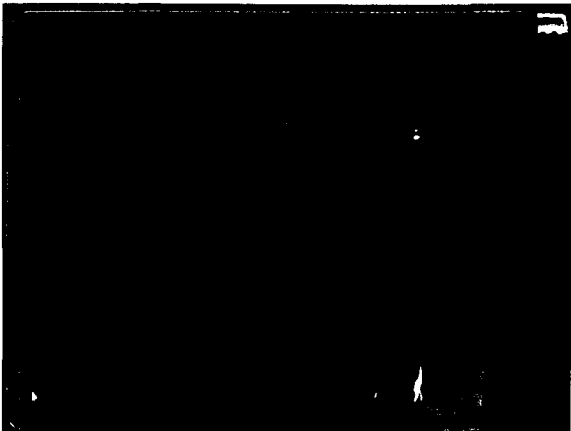
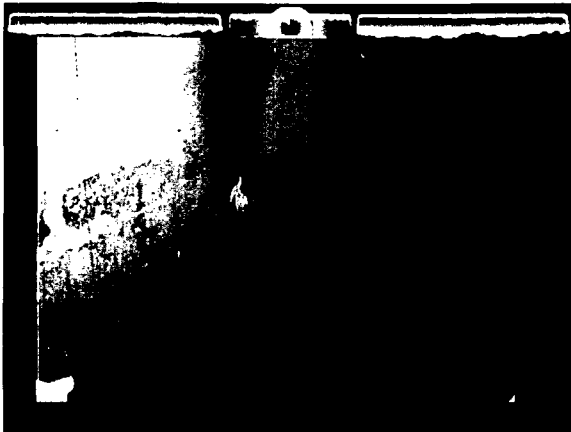
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## Hartford Vapors

- ❖ 1978 - 76 Gas and odor complaints and five fires
- ❖ 1978 Investigation
- ❖ IEPA and John Mathes and Assoc. (Clark, Shell and Amoco)
- ❖ Pointed at Clark lines to the river and Piasa and Shell Lines to barge facility
- ❖ IEPA - tetraethyl lead points to Clark





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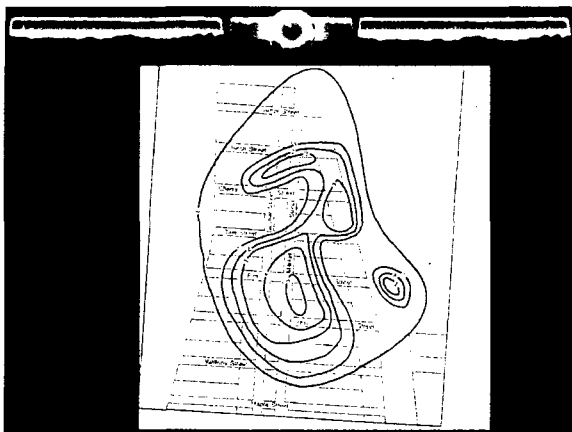
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### Hartford Vapors

- ❖ July 1978 Clark installed two recovery wells
- ❖ Low volume skimmer pumps which remove hydrocarbon from the surface of gw.
- ❖ Recovery operations ceased in Sept 2002 when the refinery closed.
- ❖ Only recovery well two has a pump.
- ❖ Estimate removal is 1.16 million gallons
- ❖ 1994-2002 about 82,700 gallons

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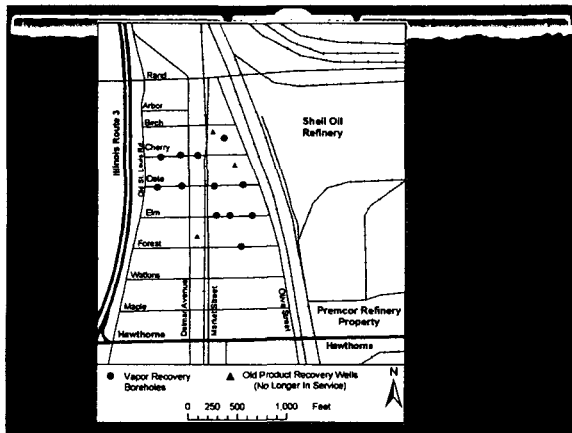
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### Shell's Rand Ave Release

- ❖ December 16, 1989 Shell had a release of 294,000 gallons of unleaded gasoline from their Rand Ave Pipeline
- ❖ Only 1,600 gallons recovered -- No extent of contamination delineated

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### Shell's Rand Ave Release

- ❖ Shell has submitted a plan for a pilot study for a Dual Phase High Vacuum Extraction system.
- ❖ Shell has expressed to the Agency that they do not wish to do any further investigation to determine extent.

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## Hartford Vapors

- ❖ 1990s complaints returned
- ❖ Fires, odors and explosive levels of vapors in homes – May 17-23, 1990 9 house fires
- ❖ IAGO become involved
- ❖ Oil companies wanted to know responsible parties
- ❖ Fingerprinting of plume was conducted

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## Hartford Vapors

- ❖ Two results of 1990 investigations
  - ❖ Fingerprinting
  - ❖ Installation of Vapor Recovery System

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## Fingerprinting

- ❖ IEPA estimated 900,000 to 3.8 million gallons of leaded gasoline under north Hartford
- ❖ Groundwater levels and hydrocarbon thickness was conducted
- ❖ Flow to NE in the northern half of Hartford
- ❖ Hydrocarbons appeared to be pooled in depressions on top of a permeable sand layer

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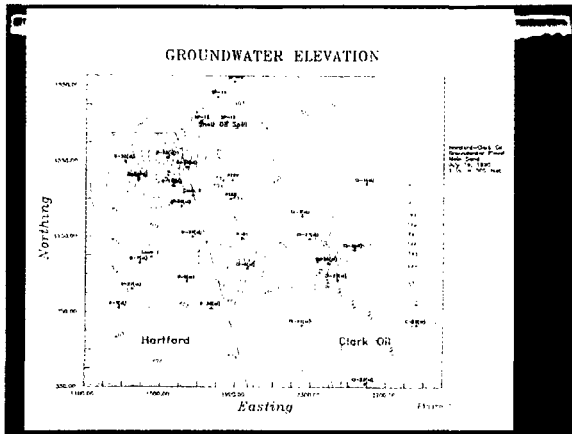
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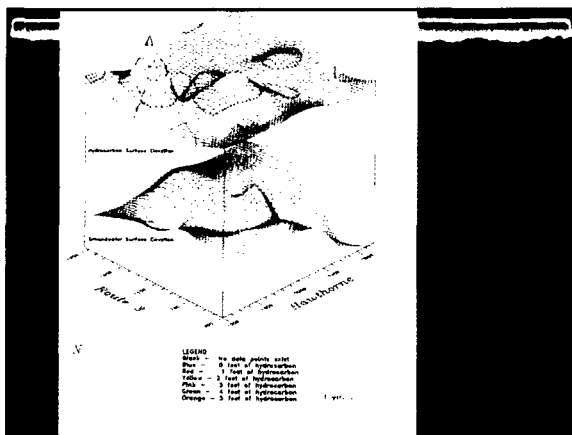
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### Fingerprinting

- ❖ The fingerprinting looked at alkyl lead additives and isomer ratio of trimethylpentanes
- ❖ The alkyl lead additives showed that the gasoline was more like the Hartford refinery than the others
- ❖ Trimethylpentanes differ depending upon the alkylation process.
- ❖ Shell and Amoco use a sulfuric acid alkylation process and Clark used a hydrofluoric acid process

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### Fingerprinting

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### Vapor Recovery System

- ❖ In August 1992 Clark installed a Vapor Recovery System in the Village.
- ❖ 12 underground vapor control boreholes are connected to vacuum blowers feeding a thermal treatment unit in the Premcor refinery.
- ❖ The VRS has recovery an estimate of 1.8 million gallons.
- ❖ From 1994 to 2002 removed 778,000 gallons

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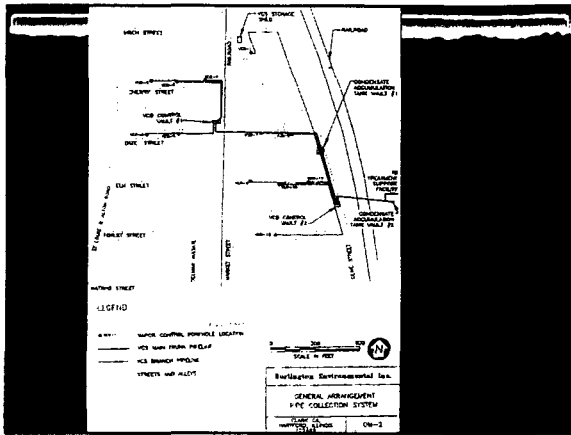
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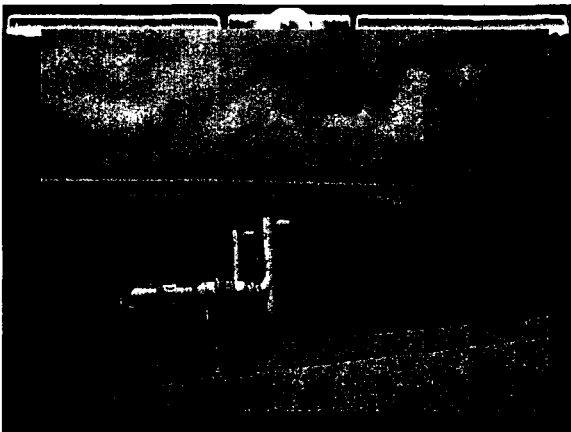
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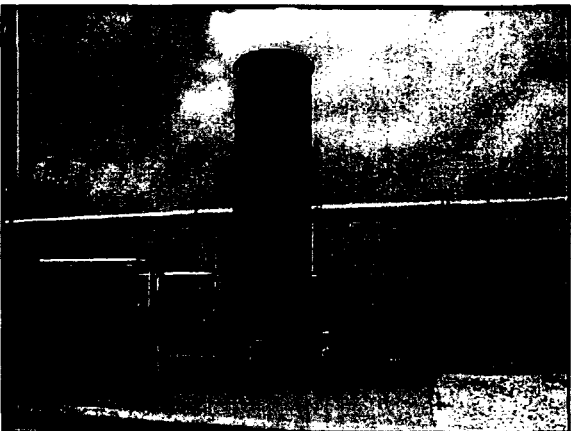
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## Releases

- ❖ Numerous releases have been documents from Premcor's river dock lines
  - ❖ 10" gasoline line
  - ❖ 10" diesel line
  - ❖ 8" gasoline line
- ❖ Release from Olive Street Line owned by Sinclair and operated by ARCO – Out of Service in 1990

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## Hartford Vapors

- ❖ Few complaints from 1992 – 2002
- ❖ Flood of 1995 – about five complaints on E. Elm and E. Watkins St.
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- ❖ VRS does not extend to Watkins Street

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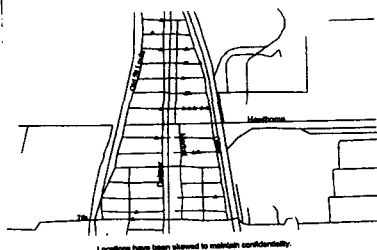
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## Approximate Location of Gasoline/Fuel Odors



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## IDPH

- ❖ IDPH conducted indoor air sampling the summer of 2002
- ❖ IDPH concluded that vapor conditions in May 2002 posed a public health hazard

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## Indoor Air Sampling

- ❖ In June 2003 IDPH/IEPA conducted indoor air sampling of 18 homes
- ❖ Two samples from each home – Basement/living area
- ❖ Premcor and Apex did not fund
- ❖ IEPA needs a funding source to complete the next three round of sampling. ~\$13,500 per round

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## Groundwater Data

- ❖ IEPA has little groundwater data of the Hartford hydrocarbon plume
- ❖ The oil companies have not determined the extent of contamination

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### Premcor Refiner

- ❖ Premcor has agreed to conduct a free phase hydrocarbon study under the refinery only
- ❖ Refinery may be source of north Hartford plume
- ❖ As part of the study Premcor will study the existing VRS in Hartford. Complete work by August

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### Complaint

- ❖ IAGO has filed a complaint against Premcor and Apex Oil Company
- ❖ IEPA has referred refinery groundwater and RCRA violations to IAGO
- ❖ IAGO has sent letters to Shell, BP, Sinclair and ARCO - response due July 11, 2003

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### USEPA

- ❖ On May 9, 2003 the IEPA asked the USEPA to respond to the Hartford vapor problems
- ❖ Assess the feasibility of expanding the current groundwater vapor recovery system to provide relief for those who are experiencing vapors in basements.

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## Remedy

- ❖ Need a comprehensive study to determine lateral and vertical extent, movement and composition of vapors and liquid contamination and pathways of exposure.
- ❖ Interim measures to reduce exposure
- ❖ Comprehensive study to determine feasibility alternatives to eliminate vapor and liquid contamination
- ❖ Implementation of selected remedial actions to eliminate vapor and liquid contamination

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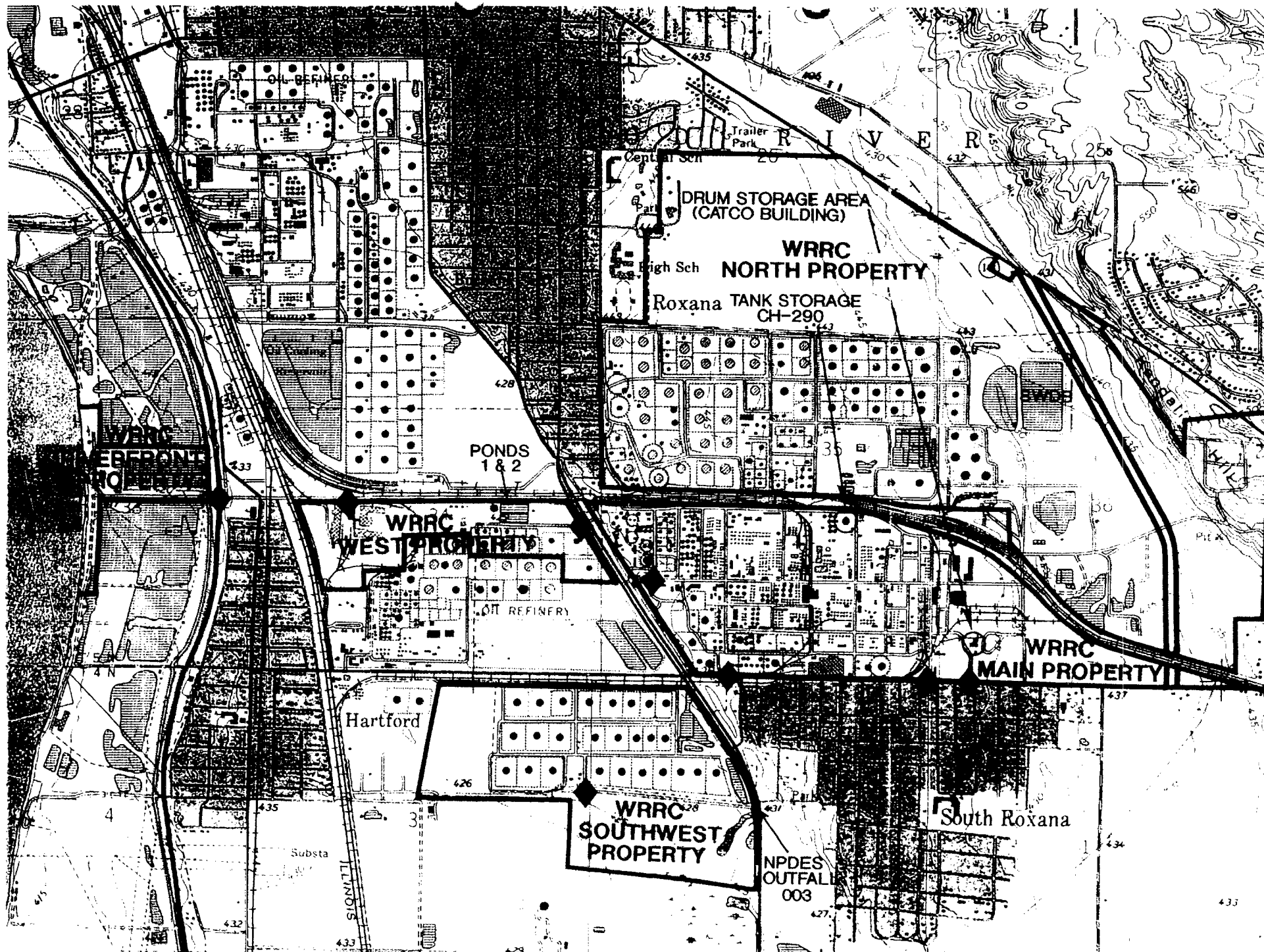
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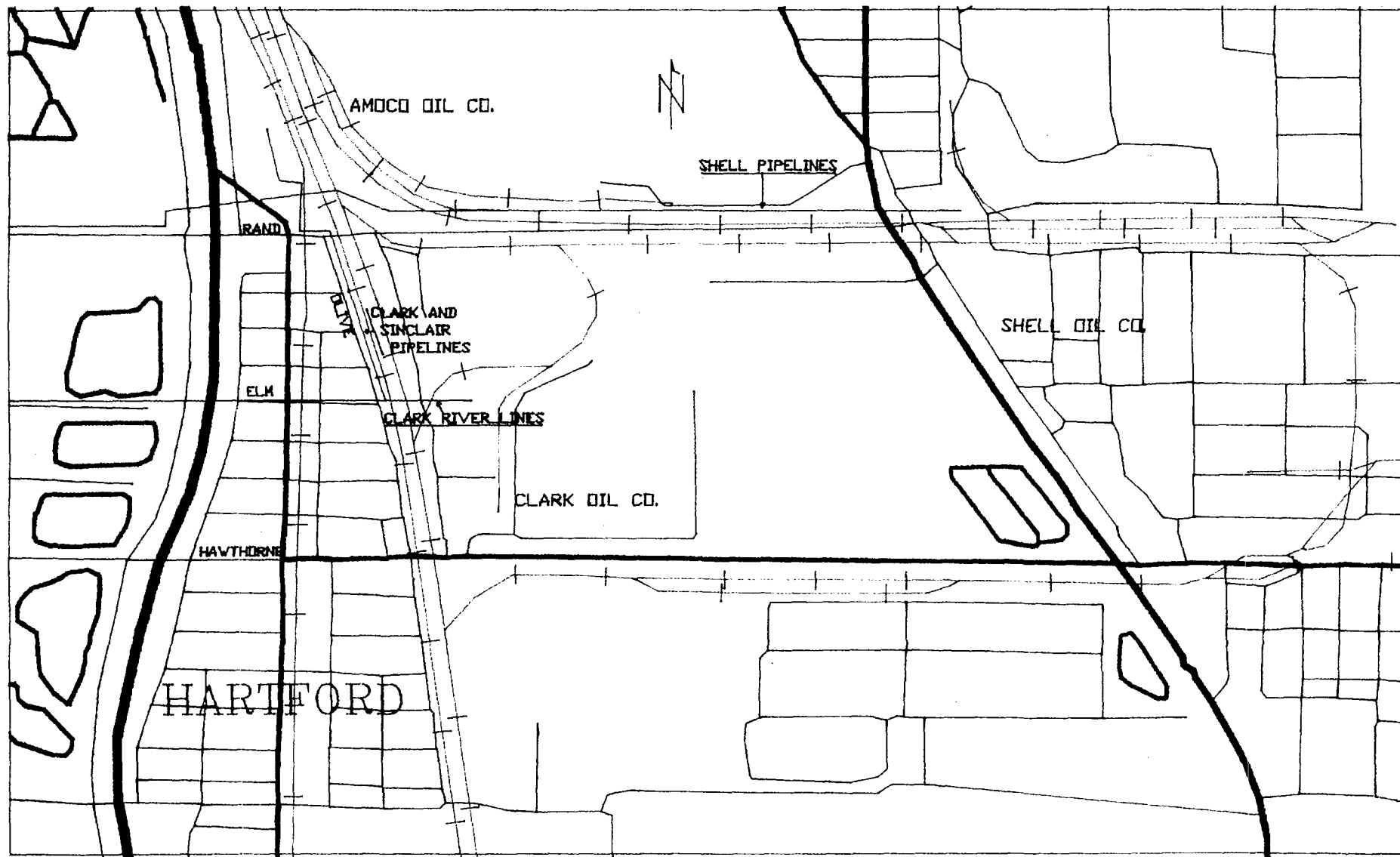
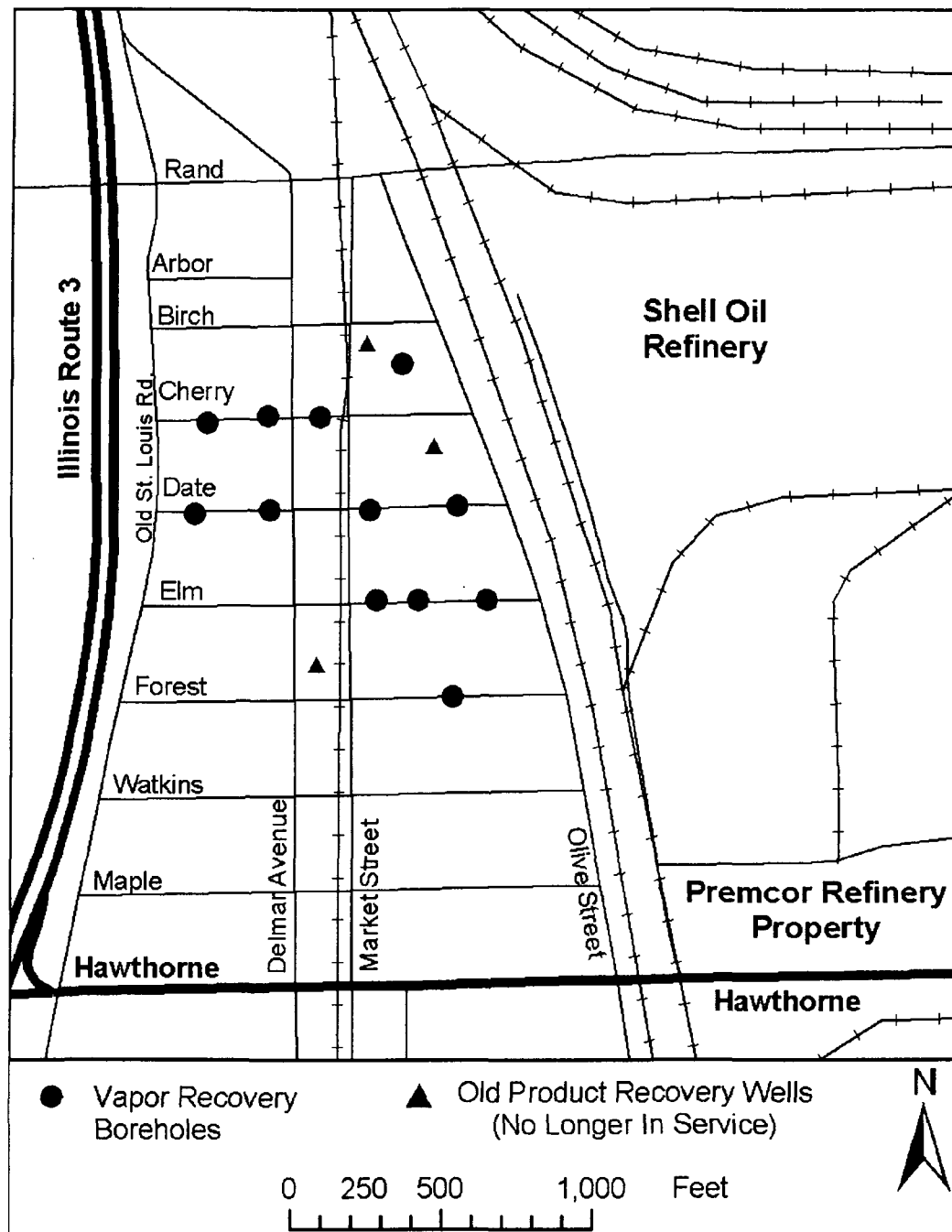
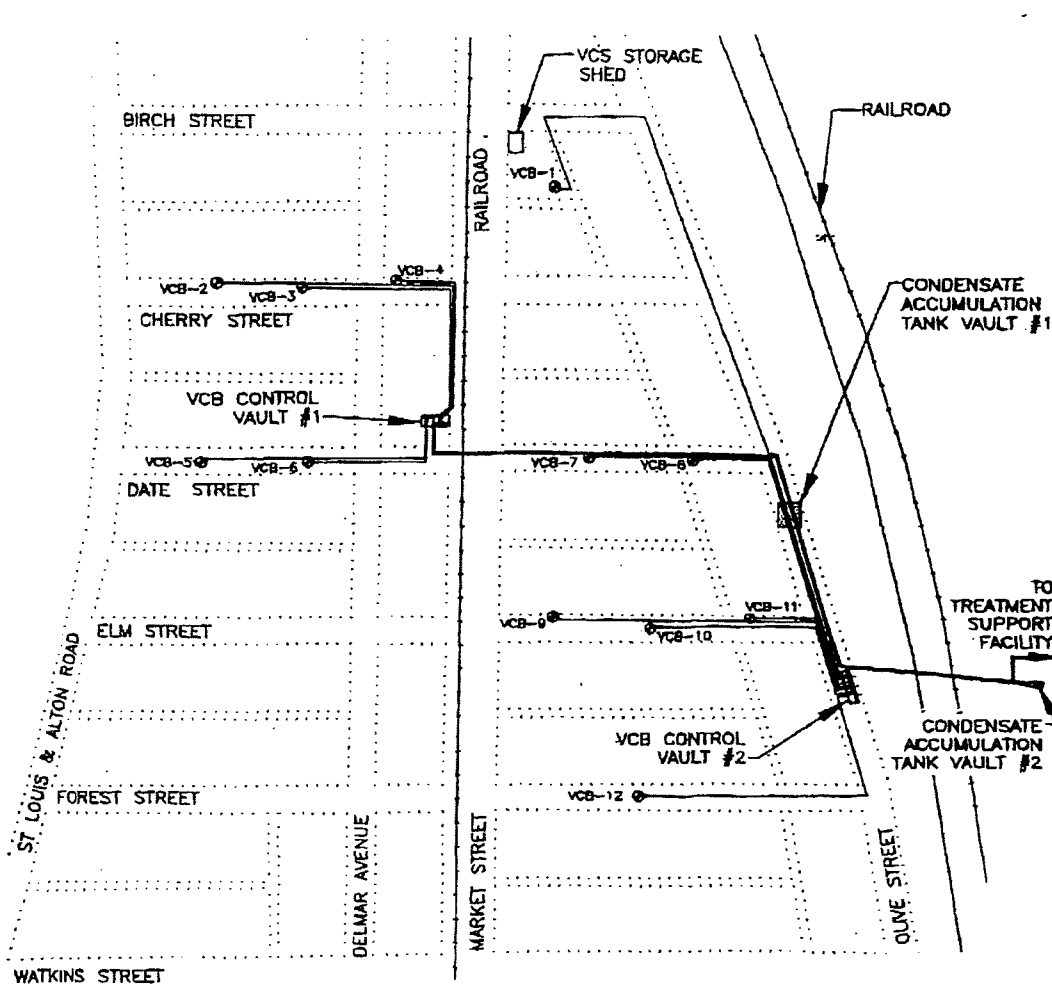


Figure 1









# LEGEND

- VCB-1 *Flow + hven* VAPOR CONTROL BOREHOLE LOCATION
- VCS MAIN TRUNK PIPELINE
- VCS BRANCH PIPELINE
- ..... STREETS AND ALLEYS

0 300 600  
SCALE IN FEET



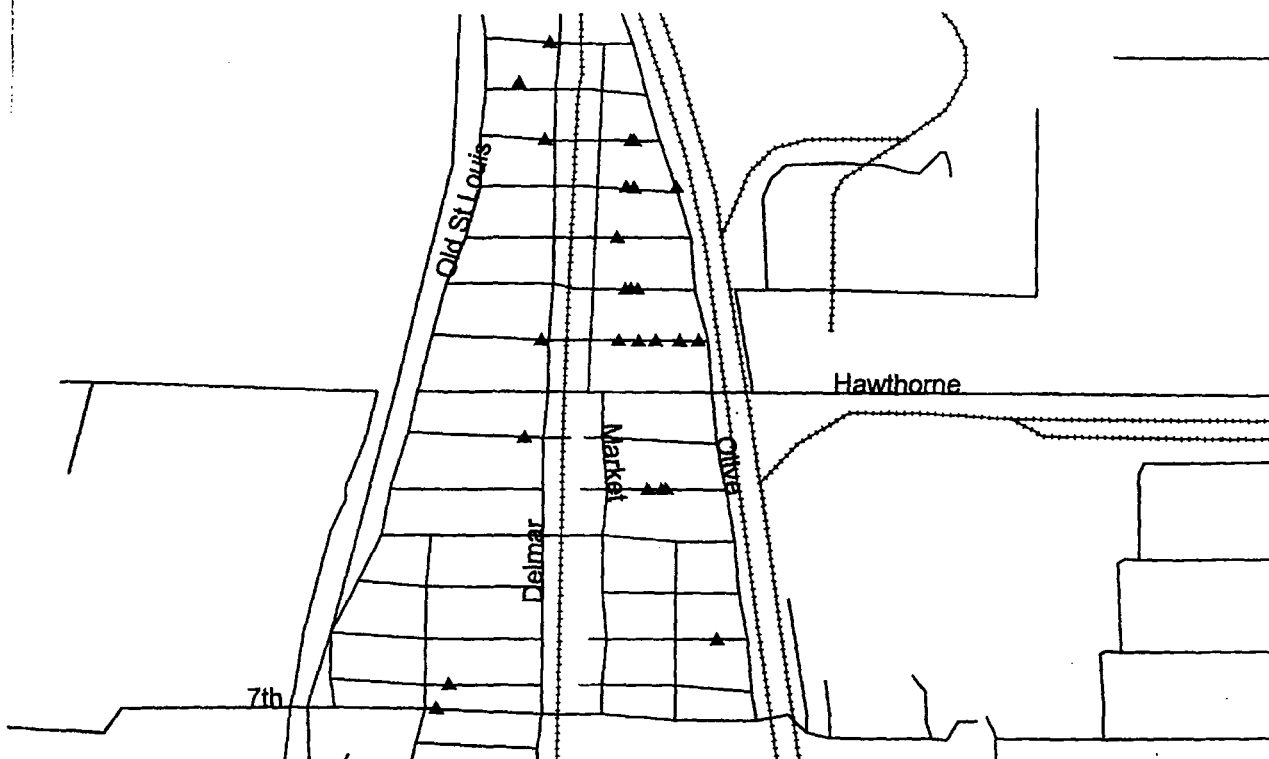
Burlington Environmental Inc.

GENERAL ARRANGEMENT  
PIPE COLLECTION SYSTEM

CLARK OIL  
HARTFORD, ILLINOIS  
122489

OM-2

# Approximate Location of Gasoline/Fuel Odors



Locations have been skewed to maintain confidentiality.



▲ Gasoline/Fuel Odors Reported  
--- Rails  
— Roads

Source: IDPH Toxicology Section

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- ❖ Population – about 650
- ❖ Madison County
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